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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,722	07/07/2003	Edgardo Costa Maianti	DID1044US	7562
9561 7590 11/21/2007 POPOVICH, WILES & O'CONNELL, PA 650 THIRD AVENUE SOUTH SUITE 600 MINNEAPOLIS, MN 55402			EXAMINER CRAIG, PAULA L	
			ART UNIT 3761	PAPER NUMBER
			MAIL DATE 11/21/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/614,722

Applicant(s)

MAIANTI ET AL.

Examiner

Paula L. Craig

Art Unit

3761

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 September 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 and 10 is/are pending in the application.
- 4a) Of the above claim(s) 6-8 and 10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 13, 2007 has been entered.

### ***Response to Arguments***

2. Applicant's arguments filed June 13, 2007 have been fully considered but they are not persuasive. Applicant argues that the peristaltic pump described by Raible is a separate pump which does not form a part of the integrated system disclosed by Raible, so that motivation is lacking to connect this separate peristaltic pump to the outlet of the heat exchanger disclosed in Raible. Applicant also argues that a modification to Raible to include a pulsating pump connected to the outlet of the heat exchanger would require substantial changes to the integrated system disclosed by Raible, and that a person of skill in the art would have no reason to make those changes. However, Applicant's specification does not teach that a pulsating pump serves any stated purpose or solves any particular problem. On the contrary, Applicant's specification teaches that the pulsating pump can be replaced with a centrifugal pump in the invention, which strongly

suggests that pulsating pumps and centrifugal pumps are equivalents (specification, page 5, lines 13-14). Pulsating pumps are a known type of pump for use in integrated systems, as shown by Ghelli '990. Applicant's specification does not disclose that blood flow through the heat exchanger and then the pump, rather than the pump first and then the heat exchanger, serves any stated purpose or solves any particular problem.

Applicant's specification includes an embodiment of the invention in which the pump is placed before the heat exchanger (specification, Fig. 5). U.S. Patent Nos. 4,424,190 to Mather, III et al. and 4,876,066 to Bringham et al. each teach a monolithic system in which the pump follows the heat exchanger. U.S. Patent No. 5,817,045 to Sever, Jr. and US Patent Application Publication No. 2004/0015042 to Vincent et al. each teach a system having pumps both before and after the heat exchanger (Applicant's claims do not require that only a single pump is present in the system).

### ***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raible (US 5,770,149) in view of Ghelli (US 2002/0057990).

5. For Claim 1, Raible '149 teaches a device for treating blood in an extracorporeal circuit including a venous blood reservoir having an inlet and an outlet (extracorporeal blood oxygenation system 10 and reservoir 111, Figs. 3 and 8-9a, col. 1, lines 7-13, col. 3, lines 55-62, col. 5, lines 18-38, col. 12, lines 8-52, col. 13, line 60 to col. 14, line 5).

Raible teaches a heat exchanger having an inlet and an outlet (heat exchanger portion, including heat exchanger tubes 54 and heat exchanger cavity 50; Figs. 3, 7, and 8-9a, col. 6, lines 11-26, col. 7, line 1 to col. 9, line 7). Raible teaches a pump having an inlet and an outlet (pump includes pump impeller housing cavity 30 or 30a, pump impeller 40 or 40a, motor drive component 14, Figs. 3 and 8-9a, col. 5, line 18 to col. 6, line 37).

Raible teaches an oxygenation apparatus having an inlet and an outlet (membrane oxygenator portion, including gas-exchange cavity 72 and gas exchange membranes 74; Figs. 3 and 8-9a, col. 3, lines 31-55, col. 8, line 1 to col. 9, line 17). The device has an arterial blood filter having an inlet and an outlet (arterial filter apparatus 128 and chamber 126, Figs. 9-9a, col. 3, line 63 to col. 4, line 4, col. 12, line 55 to col. 13, line 41, col. 15, lines 17-25). Raible '149 teaches a pulsating pump (peristaltic pump, col. 9, lines 45-56). Raible teaches the venous blood reservoir, heat exchanger, pump, oxygenation apparatus, and arterial blood filter being integrated into a single monolithic assembly (Figs. 3 and 8-9a, col. 1, line 16 to col. 2, line 10). Raible '149 does not expressly teach the pulsating pump being the pump connected to receive blood from the outlet of the heat exchanger. However, it is well known in the art to vary the order in which the components of a device for extracorporeal blood treatment are connected; it is also well known in the art to include pumps at various points between the components of the system as needed to keep the blood flowing. Ghelli teaches a device for treating blood in an extracorporeal circuit having a venous blood reservoir, a heat exchanger, a pump, an oxygenation apparatus, and an arterial blood filter (Fig. 7, paragraphs 1-3, 14, 24-27). Ghelli teaches the integration of these components into a

single monolithic assembly to save space in the vicinity of the operating field (Fig. 7 and paragraphs 2-3, 24-27). Ghelli teaches a pulsating pump receiving blood from the outlet of the heat exchanger (pumping unit 1, Fig. 7, paragraphs 15 and 21-24). Ghelli teaches that the pulsating pump provides for compactness in the device (paragraph 26). Applicant's specification does not disclose that blood flow through the heat exchanger and then the pump, rather than the pump first and then the heat exchanger, serves any stated purpose or solves any particular problem. Applicant's specification includes an embodiment of the invention in which the pump is placed before the heat exchanger (specification, Fig. 5). See *In re Dailey and Eilers*, 149 USPQ 47 (CCPA 1966). It would have been obvious to one of ordinary skill in the art to modify Raible '149 to include a pulsating pump receiving blood from the outlet of the heat exchanger, as taught by Ghelli, to provide for compactness in the device, as taught by Ghelli.

6. For Claim 2, Raible '149 teaches a cardiectomy reservoir that is monolithically connected to the venous blood reservoir (reservoir 111 and defoamer/filter element 122 receives blood from either venous blood return inlet 120 or cardiectomy blood inlet 122, Figs. 8-8a, col. 12, lines 8-52).

7. For Claim 3, Raible '149 teaches the outlet of the venous reservoir being connected to the inlet of the heat exchanger, the outlet of the heat exchanger being connected to the inlet of the pump, the outlet of the pump being connected to the inlet of the oxygenation apparatus, and the outlet of the oxygenation apparatus being connected to the inlet of the arterial filter (Figs. 3 and 8-9a, col. 5, lines 18-43, and col.

12, lines 8-67; note the claim does not require direct connection, nor that blood flow directly from one component to another).

8. For Claim 4, Raible '149 teaches the device including a first hollow cylindrical structure for containing the oxygenation apparatus, wherein the first hollow cylindrical structure is suitable to accommodate the heat exchanger, and wherein the first hollow cylindrical structure supports the venous blood reservoir and the pump, respectively, at an upper end face and a lower end face, and wherein the device includes a second hollow cylindrical structure monolithically connected to the first hollow cylindrical structure and being suitable to contain the arterial blood filter (first hollow cylindrical structure is housing 20; second hollow cylindrical structure is housing 18b, including the outer wall of arterial filter chamber 126; Figs. 3 and 7-9a, col. 3, line 55 to col. 4, line 4, col. 12, line 55 to col. 13, line 21, col. 15, lines 17-25).

9. For Claim 5, Raible '149 teaches the device including a first hollow cylindrical structure which accommodates the heat exchanger and supports the venous blood reservoir and the pump so as to arrange in a coaxial and directly facing configuration the outlet of the venous blood reservoir and the inlet of the heat exchanger, and the outlet of the heat exchanger with the inlet of the pump (Figs. 3 and 8-8a, col. 5, lines 18-28, col. 12, lines 8-52).

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paula L. Craig whose telephone number is (571) 272-5964. The examiner can normally be reached on M-F 8:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tatyana Zalukaeva can be reached on (571) 272-1115. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Paula L Craig  
Examiner  
Art Unit 3761

PLC

TATYANA ZALUKAEVA  
SUPERVISORY PRIMARY EXAMINER

